



100Ah Power Hub with 40A DCDC AP100DCPH-MP

# USER MANUAL



PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATION AND MAINTENANCE, FOLLOW ALL PROVIDED WARNING & CAUTION, AND KEEP IT FOR FUTURE REFERENCE.

## ABOUT US

ATEM POWER, born in June 2017, as a synonym for exciting outdoor experience, is an Australian company with dedication and passion for the R&D of high quality products in the field of renewable energy products, batteries and related accessories.

Since the company was founded, we have committed to innovation that aims to make your life infinitely more convenient. And the belief in our conviction for quality and commitment allows us to innovate in developing products that are optimally tailored to the needs of our amazing customers.

We engineer and supply solar products for homes, 4x4s, recreational vehicles and virtually any application you can think of. And we also develop reliable, high performing deep-cycled batteries and lithium batteries for standby or daily power needs. Accessories include battery chargers and inverters that are ideal for RV's, commercial vehicles, boats, yachts and many more applications!

At ATEM POWER, we stay true to our DNA by prioritizing technological innovation designed to improve our products and striving to provide excellent customer care. Because we are motivated to explore the limits of solar power!

## **SAFETY WARNINGS & INSTRUCTIONS**

- Before using the product, read and follow the instructions carefully. Follow all manufacturer's instructions.
- Handle with care because lithium iron phosphate battery is sensitive to shocks.
- NEVER open or disassemble the power hub.
- DO NOT use the power hub for cranking or starting applications.
- DO NOT smoke, use matches, use a cigarette lighter, or allow a spark or flame near the power hub.
- ALWAYS wear eye protection, gloves and mask when working with the power hub. Remove rings, bracelets, necklaces and watches.
- Rinse with clean water and seek medical treatment immediately if the battery leaks and gets into your eyes or skin.
- Stop using the power hub if it appears to have any abnormality during operation or storage.
- DO NOT allow metal to bridge the terminals. It may spark or short-circuit the battery and cause an explosion.
- Ensure correct polarity when connecting to the terminals.
- DO NOT put the power hub into water or wet it.
- DO NOT insert objects into the sockets.
- DO NOT connect in series or parallel. Otherwise it may cause damage to the inbuilt DCDC charger and the alarm will be on.
- NEVER solder battery terminals.
- Make sure the power hub is COMPLETELY dry before use or reactivation to prevent a safety hazard.

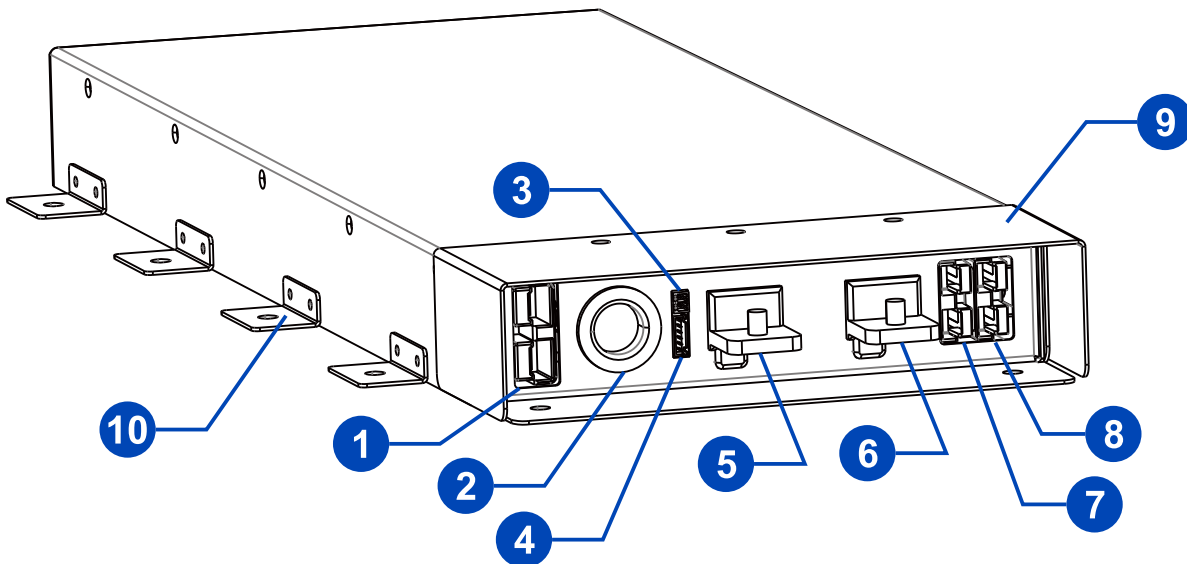
## **MAINTENANCE & STORAGE**

- The power hub should be stored in a well ventilated and dry area.
- Avoid condensation caused by temperature changes during storage. Failure to do so can lead to corrosion, rust and internal battery failure.
- Regularly check if the power hub and its terminals are clean, dry and free of corrosion.
- Avoid sharp impacts or extreme pressure.
- Make sure all equipment is disconnected and there is no potential parasitic loads which may discharge your power hub.
- Charge your power hub at least once every 3 months to prevent over-discharge.
- Fully charge your power hub before it is to be used.
- Use a damp cloth or non-metallic brush to clean the power hub. Make sure there is no charging load or source before cleaning.
- Make sure that your power hub is COMPLETELY dry before reactivating.

## PACKAGE LIST

- 1 PC(s) 100Ah Power Hub with 40A DCDC
- 10 PC(s) Mounting Brackets
- 1 SET(s) Mounting Hardware
- 1 PC(s) Battery Monitor
- 1 PC(s) Shielded Wire
- 1 PC(s) 120A Anderson Plug (Grey)
- 1 PC(s) 50A Anderson Plug (Red)
- 1 PC(s) 50A Anderson Plug (Grey)
- 1 PC(s) User Manual

## GET TO KNOW YOUR POWER HUB



- 1. 120A Anderson Plug (Input / Output)
- 2. Cig Socket (8~14.6V, 10A)
- 3. ACC Ignition Port
- 4. Battery Monitor Port
- 5. Negative Terminal (Input / Output)
- 6. Positive Terminal (Input / Output)
- 7. 50A Anderson Plug (Solar Input)
- 8. 50A Anderson Plug (DC Input)
- 9. Port Cover
- 10. Mounting Brackets

## INSTALLATION

This ATEM POWER power hub is designed to fit where other power hubs can't thanks to its slimline design. You can slide it behind a seat, on a wall or at the back of a canopy.

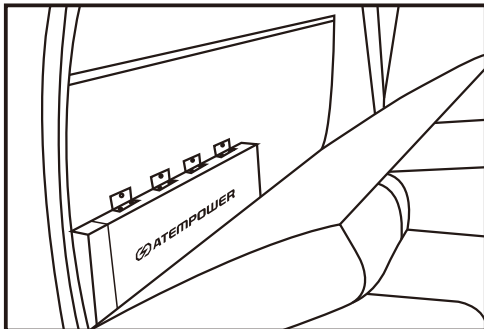


Figure 1a-Behind the seat

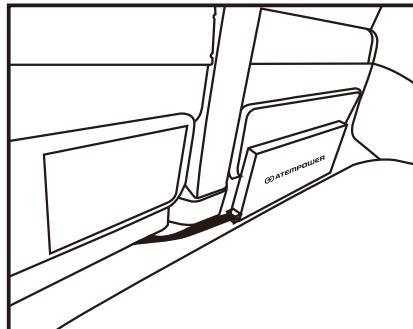


Figure 1b-Strapped at the back of a 4x4

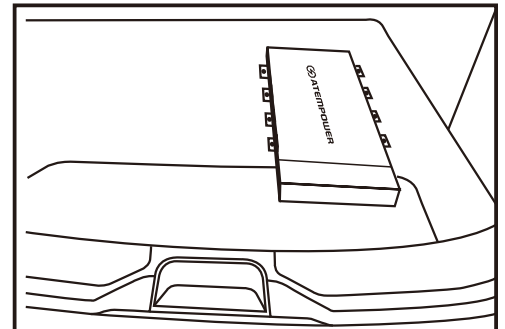
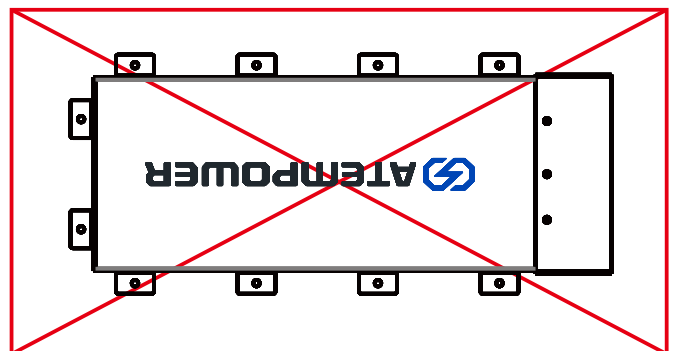
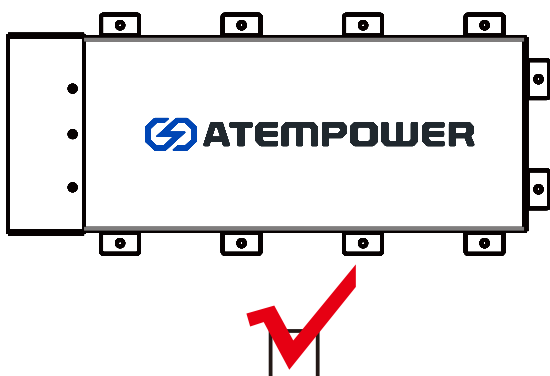


Figure 1c-Back of 4x4

- Make sure the power hub is properly strapped down or securely fixed in place before operating your vehicle.

## MOUNTING & ORIENTATION

The power hub can be mounted flat or on its side in any orientation, except on its side with the 120A Anderson plug at the bottom, as in this configuration the internal cells will be upside down.



- When mounting the power hub, ensure that no electronic components or wires of your vehicle will be drilled or penetrated inadvertently. Otherwise, it may result in potential threats to your safety.
- Use **ONLY** the existing mounting holes with screws of proper lengths to mount the power hub.
- Make sure the power hub is mounted tightly.

## OPERATION

### Lithium Reactivation

- The DC-DC charger will automatically reactivate your sleeping lithium battery if it was stored in a discharged state as self-discharge would gradually deplete the remaining charge. A small charge current will be used from the auxiliary battery to activate its BMS. Please note that the battery should be disconnected from the load, and that the polarity should be correct. Both DC and PV inputs are supported.

### Input Priority

- When both solar and DC input meet the start-up condition (which does not mean you need to connect both solar and DC input), the charger will automatically choose DC input. Even if solar input is chosen to charge your battery, the controller will consistently detect whether the DC input meets the charging requirement and will switch to DC supply when it meets that requirement.

### ACC Line

- For vehicles with a smart alternator, you'll need to connect the ACC line to a switched ignition source (a point that supplies 12V only when the key is in the "ON" position and disconnects when the key is in the "OFF" position, for example) of your vehicle, usually it can be found in the vehicle's fuse box and a fuse tap can be used. Then the main battery will start charging your auxiliary battery.

### DC Input

- Start your vehicle and let it idle.
- The charger will recognize that there is a charge being applied to the main starting battery.
- It will charge your auxiliary battery when the main battery has reached 13V or when its voltage is or above 12V (ACC line connected).
- The charger will continue to operate even after the vehicle has been switched off, however when the main starting battery falls below 12.7V (ACC line not connected) or is less than 11.3V (ACC line connected), the charger will stop charging.

Note: To obtain the accurate voltage of the starter battery, it will conduct scheduled measurements at a 100-second downtime interval.

### Solar Input

- The charger will shift to solar charge mode when the input terminal is connected to the solar panel.
- Charging begins when the output of solar panel is greater than 13V, and the panel will stop to charge when its output is below 12V.
- The DC to DC charger can also charge your battery via solar panels through its MPPT solar input section. Maximum Power Point Tracking (MPPT) allows it to optimise the electronics to ensure all of the watts available from the solar panels are extracted. This makes them operate at the most efficient voltage and ensures you get maximum solar energy supply.

Note: This charger is not designed to charge your auxiliary battery with DC input and solar simultaneously, DC enjoys input priority over solar.

## **BUILT-IN PROTECTIONS OF DCDC CHARGER**

### **Input Reverse Polarity Protection**

Both solar and DC input ports are equipped with reverse polarity protection. If your polarity is reversed, the charger won't begin charging.

### **Input Overvoltage Protection**

When the voltage of the solar input exceeds 26V or that of the DC input surpasses 24V, the buzzer will beep-beep for 3 minutes.

### **Output Reverse Polarity Protection**

Output ports are equipped with reverse polarity protection. If your polarity is reversed, the charger won't begin charging.

### **Battery Overvoltage Protection**

The buzzer will beep-beep for 3 minutes when the voltage of the battery is 0.4V higher than its fully charged status.

### **Over-Temperature Protection**

Charging current will be limited when the temperature of the circuit board exceeds 60°C. Charging will stop when as temperature exceeds 70°C. The buzzer will beep for 3 minutes. The charger will resume charging until temperature drops under 58°C.

### **Charge Timeout Protection**

The DC-DC charger will stop charging if it has been consistently operating for more than 12 hours. The buzzer will beep-beep for 3 minutes. The charger will also be locked.

### **BMS Protection for Lithium Batteries**

The charger will stop charging if the voltage of the LiFePO4 battery has experienced a sudden drop. The charger will recharge the battery after 5 minutes.

## PARAMETERS

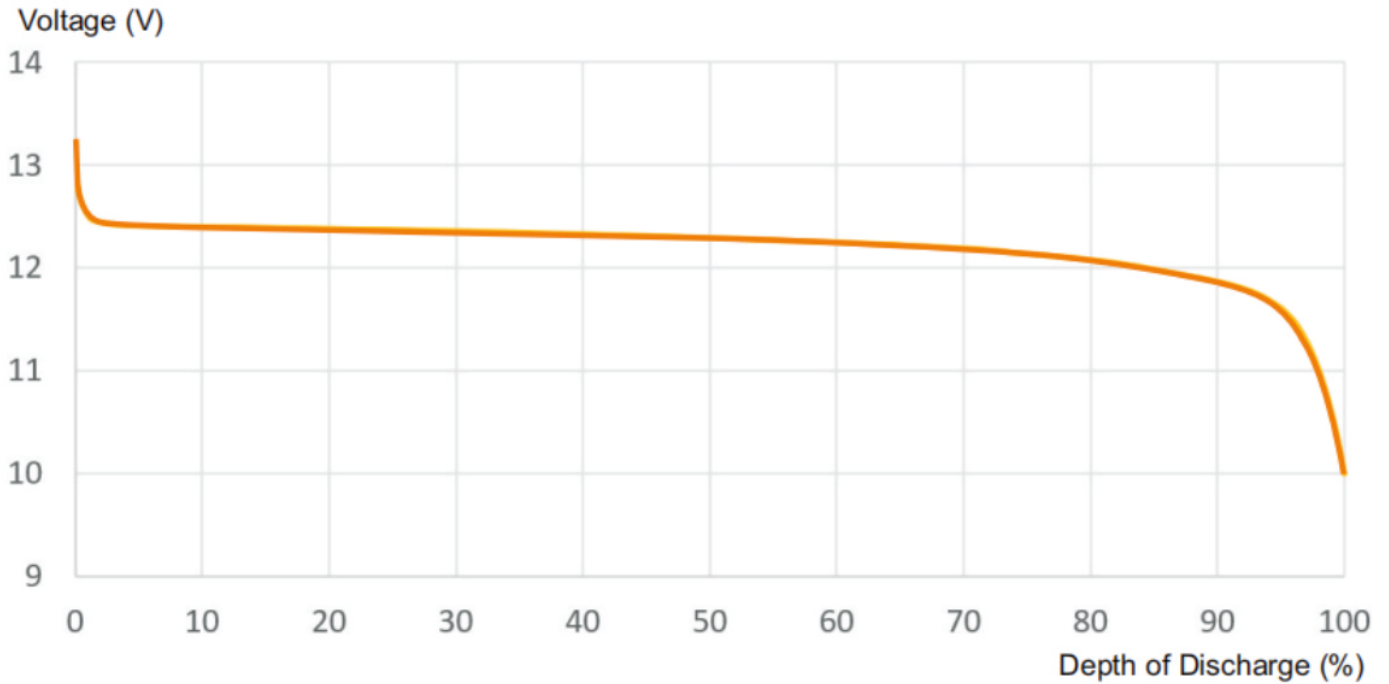
<b>LiFePO4 BATTERY</b>	
Cycle Life	2,000 Cycles
Nominal Capacity	100Ah
Energy	1,280Wh
Nominal Voltage	12.8V
DC Input Voltage	11.3~24.0V
Solar Input Voltage	13.0~26.0V
Charge Cut-off Voltage	14.6V
Discharge Cut-off Voltage	10.0V
Max. Charge Current (With 50A Anderson Plug)	40A
Max. Charge Current (With 120A Anderson Plug)	50A
Max. Pulse Discharge Current	200A ( $\leq 7S$ )
Max. Continuous Discharge Current	100A
Operation Temperature	-20°C~70°C
Case Material	Steel
Product Dimensions (With Brackets)	712.5*315*61.5mm
Product Weight	18kg

<b>In-Built DCDC Charger</b>	
DC Input Voltage	11.3~24.0V
Solar Input Voltage	13.0~26.0V
Max. Input / Output Current	40A
Charging Voltage Range	7.0~14.4V
Idle Power Consumption	<10mA
Operation Temperature	-20°C~45°C

<b>Battery Monitor</b>	
Working Voltage	5.0~64.0V
Voltage / Current / Capacity Accuracy	$\pm 1\%$
Weight (LCD Interface)	107g
Dimensions (LCD Interface)	124*81.5*25mm



## DISCHARGE CURVE



## TROUBLESHOOTING

Please refer to the following instructions or contact us for professional help in case of any problem during operation.

PROBLEM	SUGGESTED SOLUTION
Overcharge	Disconnect your power hub from charging for recovery.
Over-current /short circuit protection	Disconnect your power hub, and activate it with LiFePO4 battery charger if it recovers abnormally.
Over-discharge	Output will be automatically cut off by built-in BMS. You are recommended to activate it with LiFePO4 battery charger.
Temperature beyond normal ranges	The power hub will be automatically disconnected from the load by built-in BMS. Allow it to cool down or warm up to room temperatures, and activate it with LiFePO4 battery charger if it recovers abnormally.

**Note:** It is highly likely that your power hub is damaged if it cannot be activated by the charger.



# WARRANTY



**ATEM POWER** ("Manufacturer") warrants, to the original purchaser, ("User") that its power hub, if purchased from Manufacturer or an authorized distributor or dealer, and used in a deep-cycle application, will be free of defects in material and/or workmanship from the date sold and for the duration (the "Warranty Period") of 5 YEARS. Within the Warranty Period, subject to the exclusions listed below, the Manufacturer will replace or repair, if serviceable, the power hub and/or components of the power hub, if the components in question are determined to be defective in material or workmanship. If the Manufacturer deems the power hub and/or components to be not repairable, a new, similar power hub will be offered. This Limited Warranty is to the original purchaser of the power hub and is not transferable to any other person or entity.

## **EXCLUSIONS:**

This warranty does not cover defects that are caused by normal wear and tear, inadequate maintenance, insufficient ventilation, transportation, storage or faulty repair, misuse, neglect, accident or abuse, modification to the power hub, failure to observe safety warnings and use instructions. For further clarity, this warranty is also void if the power hub:

- is used as a primary or backup power source for life support systems or other medical equipment, or any use where product failure could lead to injury to persons or loss of life or catastrophic property damage,
- operates (charge or discharge) below or above its authorized temperature range,
- is used for applications other than which it was designed and intended for,
- is not maintained in accordance with the specifications as set forth in the user manual,
- is subjected to excess vibration as might be caused by out of balance or improperly operated pads in floor burnishing machines,
- is disassembled, altered, or repaired by someone other than an authorized Manufacturer's agent,
- has been subject to misuse, abuse or physical damage, or has been modified, altered or operated with other components not approved by ATEM POWER,
- has been damaged by force majeure (e.g. flash of lightning, overvoltage, storm, fire),
- selected by the user is not of the correct size, design, and capacity for the intended application,
- is damaged due to loose connections, under-sized cabling, or reverse polarity connections, inappropriate storage conditions as defined by the Manufacturer; exposure to fire or freezing, or water damage including submersion.

## **CLAIMS:**

Request return authorization. No returns will be credited without an authorization. In the case of returned products, the power hub must be packed with enough padding and in the appropriate cartons to eliminate the risk of damage in transit.

Manufacturer's exclusive liability for breach of any warranty on the power hub shall be to replace the power hub within the warranty period in accordance with the terms of this limited warranty. In no event shall Manufacturer be liable for any loss or damages of any other kind, whether direct, incidental, consequential including lost profits, exemplary, special or otherwise, including any lost profits or removal, shipping, or installation expenses.